To: RC 13 - WR&PC
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ENVIRONMENTAL CONTROL - NEWPORT
SOLIDS WASTE DISPOSAL AREA
SOUTH SIDE OF CHRISTINA

Summary:

A statistically random three-dimensional sampling profile of the old solids disposal area was developed. Core samples as well as several miscellaneous samples and general observations indicate that this area is not now a contamination source of the Christina River. Also, the metals in these old solids are sufficiently stabilized so that the area should be of no concern to the future.

Detail:

The area was sampled as shown in the attached sketch by taking core samples down to approximate sea level. The sample points, which are permanently recorded, are representative of the area as its use evolved over the years. The core samples are labeled alphabetically from top to sea level. Water samples were also taken at several locations.

The attached table shows the results of emission spectrographic analysis of the samples taken. The following observations can be made from these data:

1. Water samples -- ground water of surface origin in the boring holes, rain water in a surface puddle and the drainage ditch, and the river water -- all had identical results for the metals analyzed. In view of the fresh water source of the Christina, we conclude that ground and river water are not being contaminated by leaching in the disposal area.

2. Three borings, Core Numbers 3, 6 and 8, were composited and leached in the laboratory. Analyses of the borings before and after laboratory leaching were essentially identical, and is indicative of the insoluble nature of the core compositions. This tends to corroborate the conclusion in 1. above.

3. The core analyses for Pb, Cu, and Zn all showed higher concentration at the surface than at sea level, indicating no leaching taking place for these metals.

4. The metals concentrations in the river bottom mud were greater than in the water; this probably represents soil erosion through the years, and is a further indication of the insolubility of the metallics.

In addition to these analytical results, the following observations were made of the disposal site:

1. Minnows populate the slow moving tidal drainage ditch which carries virtually all of the area run-off. R. G. Kissell, ESD Waste Water Consultant, considers this an encouraging indication of the lack of harmful effects.

2. Some weeds are establishing themselves in a few spots high on the waste area.

E. Hale per ewm

E. HALE
PROCESS CONTROL

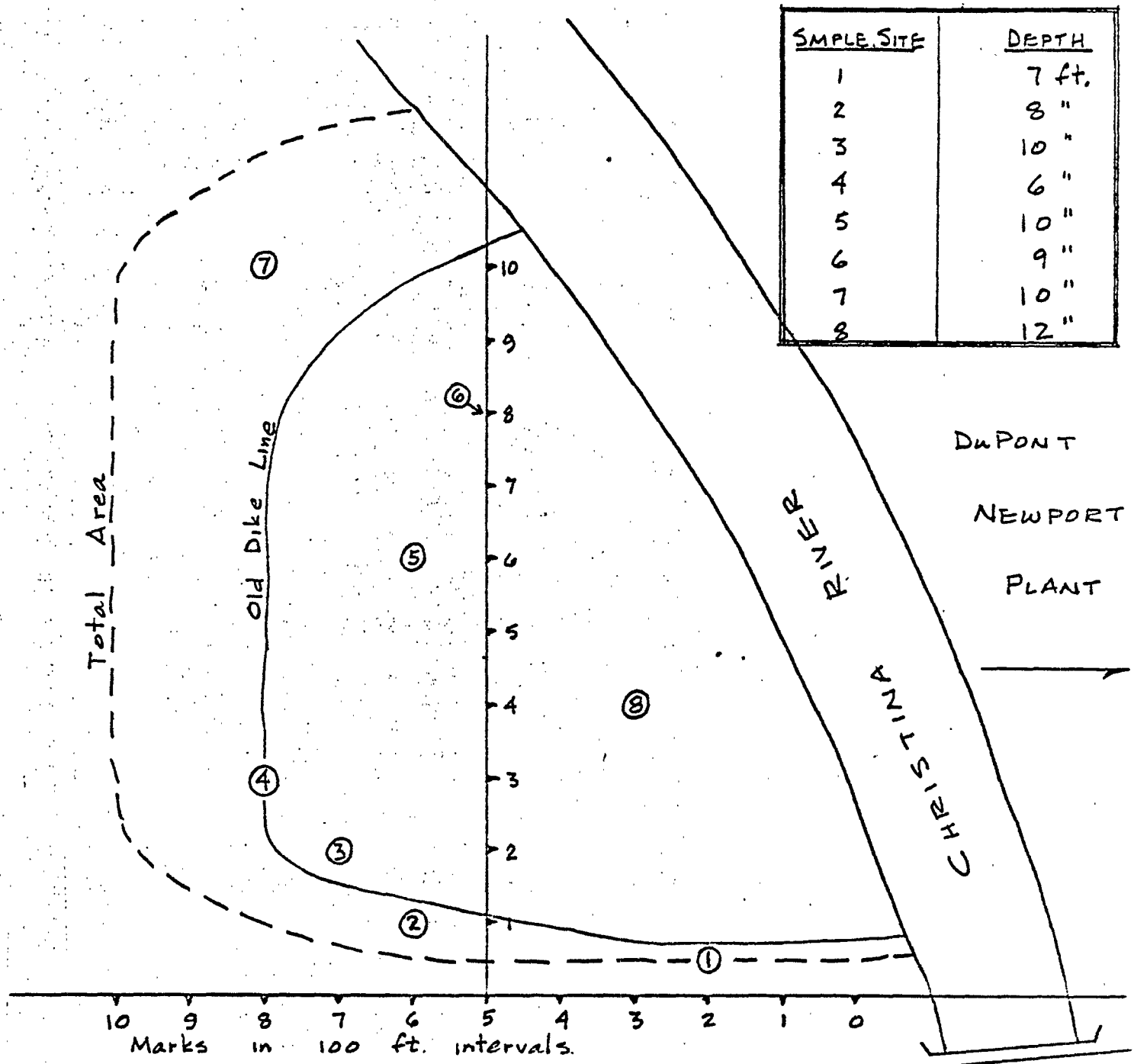
EH/ewm

WASTE DISPOSAL AREA
SAMPLE LOCATIONS

HALE

NPT.
11-6- 70

SMPLE SITE	DEPTH
1	7 ft.
2	8 "
3	10 "
4	6 "
5	10 "
6	9 "
7	10 "
8	12 "



WASTE DISPOSAL AREA SOUTH OF CHRISTINA RIVER

ANALYSIS OF SAMPLES

(Metallics in ppm)

		Hg	Pb	As	Cd	Cu	Cr	Zn	Sb
CORE NO.	1-A	<50	>1%	<100	≤100	~2000	~100	>1%	~100
	1-B	"	~5000	"	"	"	"	"	"
	1-C	"	"	"	"	"	"	"	"
Water	1-W	<1	~5	<10	<10	~2	<5	<10	<10
CORE NO.	2-A	<50	~10000	<100	<100	~5000	~100	>1%	~100
	2-B	"	~5000	"	"	~1000	"	"	"
Water	2-W	<1	<5	<10	<10	~1	<5	<10	<10
CORE NO.	3-A	<50	~1%	<100	~200	~5000	~50	>1%	~100
	3-B	"	~2000	"	<100	~1000	"	"	"
	3-C	"	"	"	< "	~500	"	~5000	"
Leached	(Comp.)	"	~5000	"	≤ "	~1000	"	>1%	"
CORE NO.	4-A	<50	~2000	<100	<100	~1000	~50	~8000	~100
	4-B	"	~200	"	"	~100	"	~1000	"
CORE NO.	5-A	<50	~10000	<100	≤100	~500	~100	~1%	~100
	5-B	<50	~5000	"	"	~1000	"	"	"
	5-C	<50	~1000	"	"	~500	"	~1000	"
Water	5-W	<1	<5	<10	<10,	~1	<5	<10	<10
CORE NO.	6-A	<50	~5000	<100	<100	~500	~100	~1%	<100
	6-B	"	~1000	"	"	~100	"	~1000	"
	6-C	"	~100	"	"	"	"	~100	"
Leached	(Comp.)	"	~1000	"	"	~2000	"	~1000	"
CORE NO.	7-A	<50	~10000	<100	<100	~500	~100	~5000	~100
	7-B	"	~500	"	"	~100	"	~100	"
CORE NO.	8-A	<50	~5000	<100	<100	~700	~100	<1%	<100
	8-B	"	~2000	"	"	~500	"	~8000	"
	8-C	"	~500	"	"	~200	~50	~1000	"
	8-D	"	"	"	"	"	"	"	"
Leached	(Comp.)	"	~1%	"	"	~500	"	~1%	"
RIVER MUD		<50	~200	<100	<100	~500	~500	~1000	<100
SURFACE WATER		<1	5	<10	<10	~1	<5	<10	<10
DITCH [redacted]ER		"	"	"	"	"	"	"	"
RIVER [redacted]ER		"	"	"	"	"	"	"	"